

REMARKS

Claims 1-3, 5, 6, 29-31, 33-44, and 46-52 were presented for examination and were rejected.

The applicants have added new dependent claim 53. Support for the claim can be found in Figure 2 of the original application.

The applicants have also added new independent claim 54. Support for the claim can be found in original claims 1, 4, 8, 9, and 13-15 of the PCT application as published.

The applicants respectfully request reconsideration in light of the amendments and the following comments.

35 U.S.C. 103 Rejection of Claims 1-3, 5, 6, 29-31, 33-44, and 46-52

Claims 1-3, 5, 6, 29-31, 33-44, and 46-52 have been rejected under 35 U.S.C. 103 as being unpatentable over Houston et al., EP 1254645A1 (hereinafter "Houston") in view of Palmaz et al., U.S. Patent 6,190,404 (hereinafter "Palmaz"). The applicants respectfully traverse the rejection.

Claim 1 recites:

1. An internal formation for a conduit, the formation comprising a longitudinally extending member adapted to extend along an inside surface of at least a portion of the length of the conduit, the longitudinally extending member having an asymmetric profile in a direction transverse of the longitudinal axis of the member, wherein a first surface of the longitudinally extending member is at least partially directed towards an inlet of the conduit and a second surface of the longitudinally extending member is at least partially directed towards the outlet of the conduit and wherein the angle that the first surface subtends with a diameter of the conduit extending through a portion of the profile of the longitudinally extending member closest to the centre of the conduit is less than 20°, and wherein the internal formation effects spiral flow of a fluid flowing through the conduit.

The applicants respectfully submit that the asymmetric profile of the longitudinally extending member (ridge) of claim 1 confers an unexpected benefit on the spiral flow of a fluid through a conduit in comparison to the ridges disclosed in the prior art. This benefit is demonstrated by the results shown in the attached Rule 132 affidavit (labeled "Declaration"), signed by one of the applicants. The asymmetric "P3" ridge profile discussed therein induces spiral flow of a fluid through a conduit and confers surprising advantageous properties on the spiral flow compared to the other ridge shapes tested. For example, the

P3 asymmetric profile results show a low standard deviation, which indicates that the fluid flow is uniform and smooth within the conduit—that is, there is little turbulence. This is an advantageous feature, as explained on page 6, lines 13-17 of the original PCT application. Furthermore, the P3 asymmetric profile causes only a small pressure drop in the fluid flow from one end of the conduit to the other. This indicates that the fluid pressure is maintained along the length of the conduit, which is also a desirable property.

Therefore, even if the combination of Houston with Palmaz is considered by the Office to be obvious, the unexpected benefit conferred by the asymmetric profile of the longitudinally extending member of the present invention would not have been obvious at the priority date of this application.

Palmaz discloses multiple possible shapes for the groove besides “substantially asymmetric,” such as symmetrical, triangular, rectangular, square, U- or V-shaped (col. 3, lines 3-10 of Palmaz). Palmaz offers no indication as to which profile shape is optimal for the groove disclosed therein. Therefore, the skilled person would be unaware of any surprising technical advantage conferred by selecting the asymmetric shape over the other shapes. Furthermore, even if Palmaz did recommend a particular profile shape for the groove, the shape would have been selected as one that best facilitates increased migration of cells along the inner surface of the stent. Such qualities in relation to cell migration would have no bearing on whether the same shape would be advantageous for effecting spiral flow of a fluid flowing through a conduit. Therefore, it is respectfully submitted that the present invention is not obvious in view of the cited prior art.

For these reasons, the applicants respectfully submit that the rejection of claim 1 is traversed.

Because claims 2-3, 5, 6, 29-31, 33-44, and 46-52 depend on claim 1, the applicants respectfully submit that the rejection of them is also traversed.

With regard to new dependent claim 53, the claim recites a feature of the cross-section of the longitudinally extending member remaining the same along its entire length. In contrast, the asymmetric grooves depicted in Palmaz have jagged/undulating surfaces which are asymmetrical about the longitudinal axis of the groove—that is, the cross-section of the groove varies along the length of the groove (see Figs 14 and 16, and col. 6, lines 23-25 of Palmaz). Therefore, this feature further distinguishes the claim over Palmaz. If a person combined the asymmetric groove as depicted in Fig. 14 or 16 of Palmaz with the teaching of Houston, they would not arrive at this claimed internal formation.

For these reasons, the applicants respectfully submit that claim 53 is allowable.

With regard to new independent claim 54, the claim recites:

54. An internal formation for a conduit, the formation comprising a longitudinally extending member adapted to extend along an inside surface of at least a portion of the length of the conduit, the longitudinally extending member having an asymmetric profile in a direction transverse of the longitudinal axis of the member, wherein a first surface of the longitudinally extending member is at least partially directed towards an inlet of the conduit and a second surface of the longitudinally extending member is at least partially directed towards an outlet of the conduit, and wherein the first and second surfaces extend from the inside surface of the conduit towards each other and are coupled together at an apex or by a curved third surface, and wherein the angle that the first surface subtends with a diameter of the conduit extending through a portion of the profile of the longitudinally extending member closest to the centre of the conduit is less than 20°, and wherein the internal formation effects spiral flow of a fluid flowing through the conduit.

(emphasis added)

Neither Houston nor Palmaz teaches, suggests, or motivates, alone or in combination, what is recited in new claim 54 – namely that the first and second surfaces extend from the inside surface of the conduit towards each other and are coupled together at an apex or by a curved third surface.

For this reason, the applicants respectfully submit that new claim 54 is allowable.

Request for Reconsideration Pursuant to 37 C.F.R. 1.111

Having responded to each and every ground for objection and rejection in the last Office action, applicants respectfully request reconsideration of the instant application pursuant to 37 CFR 1.111 and request that the Examiner allow all of the pending claims and pass the application to issue.

If there are remaining issues, the applicants respectfully request that Examiner telephone the applicants' agent so that those issues can be resolved as quickly as possible.

Respectfully,
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